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**(54) Title of the invention:**

TELETEXT RECEIVER

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## SPECIFICATIONS

### **1. Title of the invention:**

TELETEXT RECEIVER

### **2. Field of Patent Claims:**

**(1)** The teletext receiver which selectively receives the predetermined television radio waves, converts them into a video signals and then outputs them comprises:

A reception display part where the predetermined television radio waves are selectively received, converted into a video signals, these video signals then are displayed being mixed and switched to a character display signals separately inputted from the video signals;

An operating part which provides a command to select the predetermined television waves at the above-mentioned reception display part and provides another control;

A teletext decoder which samples a teletext data multiplexed at the video signals from the above-mentioned reception display part, accumulates the said teletext data to a mass storage memory, converts the data read from the mass storage memory into character display signals, writes them into a display memory and outputs the

character display signals read from the said display memory.

The above-mentioned teletext decoder comprises:

An establish means for establishing a displaying time interval appointed from the operating part;

A display determination means for determination whether it is arrived the time interval set at the said establish means or not and for displaying the next page at every arrival at the set time interval.

### **3. Detailed explanation of the Invention:**

#### **[Technical Field of the Invention]**

The present invention relates to the teletext receiver, especially it relates to the teletext receiver capable of displaying a character displayed picture at an arbitrary displaying time interval.

#### **[The Prior Art]**

The different types of teletext receivers of the prior art comprises: a reception display part where the television radio waves are received and are displayed being mixed and switched to the character display signals provided to obtained video signals; a teletext decoder which obtains the character signals based on the signals from the above-mentioned reception display part; an operating part for controlling a channel selection and another operations. The teletext receiver of the prior art has a constitution at which the television radio waves of a

channel set at the operating part in the above-mentioned reception display part are received, the teletext data multiplexed at the video signals obtained from these television signals is accumulated at the memory being sampled by the teletext decoder, these accumulated teletext signals are converted into the character display signals and then are accumulated into the display memory, the character display signals are read from the said display memory, they are mixed to the above-mentioned video signals at the reception display part or switched to the above-mentioned video signals and then are displayed. Also, this teletext receiver has a constitution to control an operation by the contents indicated through the operating part.

In accordance with the above-mentioned teletext receiver, a reception of usual television broadcast is capable of performing an operation of the above-mentioned reception display part following the contents ordered through the operating part. Also, a reception of the teletext is capable of displaying character signals at the reception display part by operating the teletext decoder and the above-mentioned reception display part following the contents ordered through the operating part.

**[The problem which the present invention intends to solve]**

Thus, the teletext receiver of the above-mentioned prior art receives the teletext signals sent from a broadcast station and then displays them. Therefore, a display period of one or two sides in the teletext receiver is reasonably determined by the time at which signals are sent from a

broadcast station. Thus, it is inconvenient that the said interval can not be freely changed.

The present invention is constituted to solve the problem of the above-mentioned prior art, therefore, the present invention has a purpose to provide a teletext receiver capable of arbitrarily setting the display time interval of one or two sides.

#### **[Means for solution to the problem]**

In accordance with the present invention which reaches the above-mentioned purpose, the teletext receiver which selectively receives the predetermined television radio waves, converts them into a video signals and then outputs them comprises:

A reception display part where the predetermined television radio waves are selectively received, converted into a video signals, these video signals then are displayed being mixed and switched to a character display signals separately inputted from the video signals;

An operating part which provides a command to select the predetermined television waves at the above-mentioned reception display part and provides a control for selecting one or two sides or plurality of sides and provides another control;

A teletext decoder which samples a teletext data multiplexed at the video signals from the above-mentioned reception display part, accumulates the said teletext data to a mass storage memory, converts the data read from the mass storage memory into character display signals, writes them into a display memory and outputs

the character display signals read from the said display memory.

The above-mentioned teletext decoder comprises:

An establish means for establishing a displaying time interval appointed from the operating part;

A display determination means for determination whether it is arrived the time interval set at the said establish means or not and for displaying the next page at every arrival at the set time interval.

#### **[Operation of the present invention]**

The present invention with the constitution as shown above performs the following operation. Namely, the predetermined television radio waves are selectively received by the reception display part. Received predetermined television radio waves are converted into the video signals at the reception display part. The video signals from the above-mentioned reception display part are applied to the teletext decoder. The teletext decoder samples teletext data multiplexed at the said video signals and accumulates the sampled teletext data into the mass storage memory. The data read from the said mass storage memory are converted into the character display signals by the teletext decoder and are written into the display memory. The character display signals from the above-mentioned teletext decoder are mixed and switched to the video signals of the said reception display part and are displayed.

Also, if a displaying time interval is set by the above-mentioned operating part in the said establish means, the teletext decoder displays the next page at every arrival at the said set time by the display determination means.

Thus, the present invention displays a character displayed picture at an arbitrary displaying time interval not depending on broadcasting time interval of the teletext sent from the broadcast station.

#### **[An example of the preferred embodiment]**

An example of the preferred embodiment of the present invention will be described further below referring to the drawings.

FIGURE 1 is a block diagram showing an example of the preferred embodiment of the teletext receiver in accordance with the present invention. FIGURE 2 is an explanatory diagram showing an explanation of the preferred embodiment.

The preferred embodiment shown in FIGURE 1 has the following constitution. Namely, the circuit is constituted in such a way to take the television radio waves obtained by an antenna 1 into selection amplification circuit part 2. This selection amplification circuit part 2 comprises a tuner 20, a middle amplification circuit 21 and a frequency characteristic correlation circuit 22. The circuit is constituted to selectively receive the predetermined television radio waves taking the radio waves from the antenna 1 into the tuner 20, convert the radio waves into the video signals and apply to the middle

amplification circuit 21, output them amplifying into the middle amplification circuit 21, and output the amplified and outputted video signals into the teletext decoder 3 through the frequency characteristic correlation circuit 22. The above-mentioned selection amplification circuit part 2 is a circuit constituted to apply an order for selecting the predetermined television radio waves from the operating part 4. Also, the above-mentioned operating part 4 is capable of controlling the power ON/OFF and providing another control. This operating part 4 is constituted including a remote controller 40. The above-mentioned teletext decoder 3 samples the teletext data multiplexed in the video signals applied from the above-mentioned selection amplification circuit part 2, these sampled teletext data can be accumulated into a mass storage memory (RAM) 30 with extent for example, 2 (M Bite) by the said teletext decoder 3. The data read from the mass storage memory RAM 30 are converted into the character display signals. The details of constitution will be described further below. This teletext decoder 3 supplies the control signals from the operating part 4 and is constituted to control the operation of each part basing on the order from this operating part 4. The character display signals from the above-mentioned teletext decoder 3 are taken in the display part 5. The character display signals are mixed and switched to the video signals from the above-mentioned selection amplification circuit part 2 at the said display part 5 and then are displayed on the display 50. Thus, the coder 6 is a power circuit part. This power circuit part 6 is constituted to be able to supply an electric power to the above-mentioned each constitutional

element (the selection amplification circuit part 2, the teletext decoder 3, the operating part 4 and the display part 5) when the power switch part (not shown in the FIGURE) is ON. This power circuit part 6 performs a switch control through the teletext decoder 3 basing on the order from the operating part 4 by the power switch part.

Also, the teletext decoder 3 is constituted including a central processor (CPU) 31, a mass storage memory RAM 30 for control and data accumulation, read only memory (ROM) 32 stored a program operated the CPU 31, non-volatility memory 33 for storing the displaying time interval or the like reserving the screen, a data sampling/error correlation circuit 34 for sampling the data from the video signals from the above-mentioned selection amplification circuit part 2 and for correlating an error, a reception control synchronization generation circuit 35 for forming a synchronizing signal from the video signals from the above-mentioned selection amplification circuit part 2, a character generator 36 for generating a character pattern included hieroglyphs, a display memory (display RAM) 37 for writing the data read from the mass storage memory RAM 30 after the data is converted into the character signals, a display control part 38 for outputting the data being read from the display memory RAM 37, an input/output device 39 for driving the power circuit part 6 and its another external devices and for taking signals from these external devices, a system bus BUS which connects these devices and a digital/analog convert circuit DAC for converting a character signal from the above-mentioned display control part 38 into analog signal. Also, the teletext decoder 3

realizes an establish means 310 capable of establishing a displaying time interval appointed by the operating part 4 and a display determination means 311 for determining whether it is arrived the time interval set at the said establish means 310 or not and for displaying the next page at every arrival at the set time interval by operating the central processor (CPU) 31 following the program stored at the ROM 32.

The above-mentioned operating part 4 consists of a remote controller 40 and an operating panel 45 set an operating switch or the like. Therefore, the predetermined parts are operated by the signals from the operating panel 45 and the predetermined parts are operated even by the remote controller 40. The above-mentioned remote controller 40 consists of a luminance device 41, remote controller CPU 42 for forming a control signal in response to the signal from the said luminance device 41, a memory 43 connected to this remote controller CPU 42 and a remote controller transmitter 44.

The display part 5 consists of a mixing/switching part 51 for mixing and switching character signals from the digital/analog convert circuit DAC of the teletext decoder 3 to video signals from the middle amplification circuit of the selection amplification circuit part 2, a video display part 52 for outputting a video signal basing on a signal output from this mixing/switching part 51 and a display 50 for displaying a signal from this video display part 52.

Then, the reception display part 7 constitutes of the above-mentioned selection amplification circuit part 2 and the above-mentioned display part 5.

Operation of the preferred embodiment constituted in such a way will be described further below referring to FIGURES 1 ~ 4.

FIGURE 2 is a flow chart showing an explanation of operation for establishing the preferred embodiment.

FIGURE 3 is an explanatory diagram showing for supplementing an operation shown in FIGURE 2.

FIGURE 4 is a flow chart showing an explanation of display determination operation by the preferred embodiment.

The CPU 31 of the teletext decoder 3 performs a process of a flow chart shown in FIGURE 2 and also performs a process of flow chart shown in FIGURE 4 at every fixed time, for example, at every 0.1 seconds. Also, if CPU 31 performs a process, the establish means 310 and the display determination means 311 are realized.

First of all, in the above-mentioned reception display part 7 the television radio waves of the channel set by the operating part are received, the teletext data multiplexed at the video signals obtained from these television signals are sampled by utilizing the data sample/error correlation circuit 34 of the teletext decoder 3 and then are accumulated into the mass storage memory RAM 30. Also, these teletext data are received one by one if the power circuit part 6 is ON, and then are accumulated at the above-mentioned RAM 30.

First of all, an explanation will be described further below referring to the FIGURE 2. The remote controller transmitter 44 of the operating part 4 operates and the establishment of the displaying time interval is inputted.

Thus, CPU 31 performs a process shown in FIGURE 2 starting the establish means 310. Therefore, if the CPU 31 performs a process shown in FIGURE 2 starting the establish means 310, first of all, [Please, set a displaying time interval] (Step 100) will be displayed as shown in FIGURE 3. Thus, the data of displaying time interval are inputted by the remote controller transmitter 44 of the operating part 4 (Step 101). Thus, the set time interval is displayed on the display 50 according to the establish means 310 (Step 102). If set time interval displayed on the display 50 is inputted and determined by the user, it moves to Step 104 by inputting the predetermined signal from the remote controller transmitter 44 of the operating part 4. But in case if the said signal is not inputted or another time interval is desired, it returns to Step 101 by inputting this effect from the remote controller transmitter 44 of the operating part 4 (Step 103). Thus, if it moves to Step 104, this set time interval is stored at the non-volatility memory 33 according to the establish means 310 (Step 104). Therefore, a displaying time interval is set.

Following, a flow chart shown in FIGURE 4 will be described further below. This flow chart is performed at every predetermined time as shown above. Therefore, the CPU 31 of the teletext decoder 3 realizes the display determination means 311 and, first off all, determines whether a timer n value of the display determination means 311 reaches displaying time interval T set at the non-volatility memory 33 (Step 200). If it is determined that  $T \geq n$  in this Step 200, it moves to Step 201, timer n is calculated as  $n = n + 1$  and timer n is counted up. Thus,

the above-mentioned page is displayed while processing the Step 200 and Step 201.

On the one hand, if it is determined that  $T = n$  in this Step 200, it moves to Step 202, the next page of the page displayed on the display 50 before Step 202 starts is obtained being searched by the mass storage memory RAM 30 and then is displayed on the display 50 (Step 202). Then it moves to Step 203, timer  $n$  of the display determination means 311 is reset ( $n = 0$ ), then it moves to Step 201, the timer  $n$  is calculated as  $n = n + 1$  and timer  $n$  is counted up. Then, there is a flow again when there is only a count up of the timer  $n$  (Step 200, 201), this flow processes before timer  $n$  becomes  $n = T$ .

Thus, the present embodiment is operated and it is possible to arbitrary set a displaying time interval.

### **[Results of the present invention]**

In accordance with the above-mentioned present invention, the character displayed picture displays at an arbitrary displaying time interval not depending on a broadcast time interval of the character sent from a broadcast station.

#### **4. Brief description of the drawings**

FIGURE 1 is a block diagram showing an example of the preferred embodiment in accordance with the present invention.

FIGURE 2 is a flow chart showing an explanation of operation for establishing the preferred embodiment.

FIGURE 3 is an explanatory diagram showing for supplementing an operation shown in FIGURE 2.

FIGURE 4 is a flow chart showing an explanation of display determination operation by the preferred embodiment.

#### **[Description of Numbers]**

3 is a teletext decoder;

4 is an operating part;

7 is a reception display part (a selection amplification circuit part 2; a display part 5);

44 is a remote controller transmitter;

310 is an establish means;

311 is a display determination means.

FIG.1

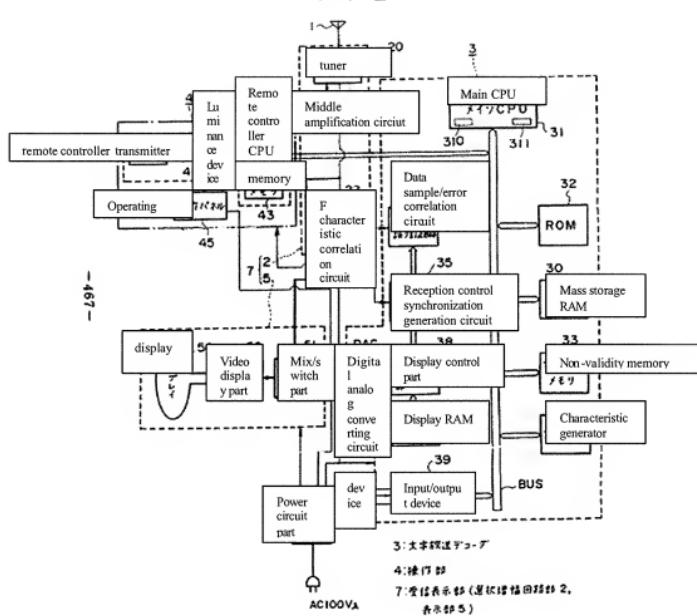


FIG. 2

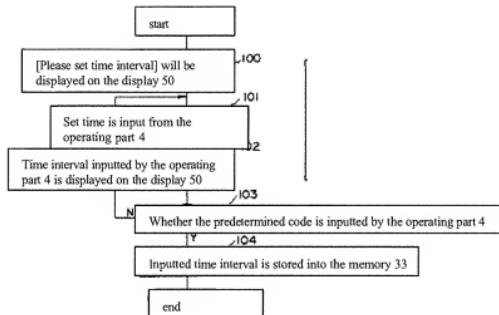


FIG.3

